DOCUMENT RESUME

ED 286 306 EC 200 484

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TITLE Artistic Expression through Exposure to the Right Brain Mode and Corresponding Relationship to the Learning Disabled.
PUB DATE [83]
NOTE 17p.
PUB TYPE Information Analyses (070) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Art Activities; *Brain Hemisphere Functions; Elementary Secondary Education; *Freehand Drawing; *Learning Disabilities; *Perceptual Development; *Reading Difficulties; *Spatial Ability; Teaching Methods; Visual Perception

ABSTRACT

Research on hemispheric mode functioning indicates that some connections exist between learning disabilities (LD) and right-mode dominance, which suggests that instruction should be offered to develop right hemispheric (spatial perception) abilities in LD persons. The influence on student drawing of the right-left hemispheric shift during reading is examined, and a study is described which evaluated drawing instruction presented to learning disabled students through the right mode channel of awareness. Twenty-five LD students (ages 12 to 21) received drawing instruction based on guidelines from the book "Drawing on the Right Side of the Brain" by B. Edwards. Goals of this method included promoting a positive self-image through successful production of artwork, increasing awareness of concrete spatial relationships in both two- and three-dimensional formats, and increasing visual perceptual awareness in general. The instruction began with a basic draw-a-man task and progressed to further exploration of spatial relations and conscious right mode shifting. Marked differences were found in the subjects' ability to draw and produce artwork when they were encouraged to follow the right mode shifting procedure. Among observations noted were increased student motivation and self confidence. (CL)

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Artistic Expression Through Exposure To The Right Brain Mode And Corresponding Relationship to the Learning Disabled

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> "The main theme to emerge ... is that there appear to be two modes of thinking, verbal and non-verbal, represented rather separately in left and right hemispheres, respectively, and that our educational system, as well as science in general, tends to neglect the nonverbal form of intellect. What it comes down to is that modern society discriminates against the right hemisphere." (Sperry, 1973)

Educational Evolution

Survival in our culture most assuredly depends upon the skills of reading, speech and, more generally, language. When failure to learn these essential skills occurs, the vital link between idea and symbol remains unconnected, and current societal trends view the offending individual displaying such inabilities as "learning disabled". The label of learning disabled is applied to those persons showing disabilities in the realm of the academic. However, a learning disability can be considered "failure or inability to learn important connections". With this in mind, the average person-on-the-street can be considered severly learning disabled in the world of artistic expression. Since one is not dependent upon artistic expression for survival, the ability to be productive artistically is not considered to be important by society; especially by academia and thus the plight of the severely disabled "dyspictoric" is left unattended.

As the pendulum is known to swing both ways, so trends in

education and research are known to pursue issues to extremes. The dominance of formal language orientation in education has slowly begun to acknowledge and allow the importance of non-verbal experiences. Research in neurology and specifically split-brain studies performed by Sperry and his associates in the 1950's and 1960's (Smith, 1983; Lerner, 1981; Edwards, 1979) promoted awareness of the important relationships in brain hemispheric lateral asymmetry. The idea of hemispheric dominance has led to the growing awarenness of separate and intertwining hemispheric functions for normal cognitive development (Smith, 1983). By ignoring avenues available for cognitive development through dealing primarily with the left hemisphere (language), the path traditionally followed by education, one ignores half an individual's potential. Offering areas of instruction that allow for the development of right hemispheric (spatial-perception) abilities can only enhance one's ability to learn.

Hemispheric Mode Compatability, Dominance, and Chacteristics

Brain specificity has been stated but is not considered mutually exclusive. Brain regions rarely work in isolation (Smith, 1983; Lerner, 1981). Hemispheric cooperation allows a synthesis of each hemisphere's unique abilities to occur, each addressing that portion of the task best suiting its mode of information-processing. On different occasions, one hemisphere may be needed while the other appears to have nothing to offer. Conflict can also occur between the hemispheres as one attempts to remain dominant in a task for which it is not best suited. Hemispheric control is determined by 2 factors: speed at which the task is accomplished (that hemisphere which performs the task quicker), and hemispheric motivation for the task at hand

(that hemisphere which prefers the task more)(Edwards, 1979).

The left hemisphere has been cited to respond to language stimuli such as inner thought, words, symbols that have verbal meaning, and memory for verbal material, as well as to speech, analytic thinking, evaluating details and sequencing (Smith, 1983). Left-mode functioning is also considered abstract, temporal, rational, digital, logical and linear (Edwards, 1979). Because language is vital to learning, the hemisphere containing those skills is called "dominant", usually referring to the left hemisphere (Smith, 1983).

In contrast, right hemispheric attributes appear to number among its ranks processing information as wholes rather than as parts or details, primarily processing nonverbal stimuli such as body awareness, orientation in space, directional orientation, pictorial perception, mental imagery, spatial perception, memory for visual stimuli, complex forms, color, and environmental sound (Smith, 1983). Right-mode functioning is also considered concrete, analogical, nontemporal, nonrational, intuitive and holistic or global (Edwards, 1979).

In looser terms, the right hemisphere operates in a mode preferring to dream, lose all sense of time, understand metaphors and go beyond the concrete; to create new combinations of ideas; to regard things as they are; to require no words, categories or names. Organizational and language skills are no plus when in right hemispheric mode.

Correlation: Learning Disabled Attributes and Hemispheric Mode

In reviewing hemispheric mode functioning, some connections can be made between right-mode functioning and characteristics of those persons considered learning disabled. Through observa-

tion, practical experience, and noted research (Smith, 1983), some general characteristics can be attributed to persons with learning disabilities such as lack of organizational skills applied in the academic setting, in everyday living situations, and in social interactions; excessive daydreaming; difficulty interpreting and using symbols; poor development of logical and rational reasoning and abstract thinking abilities; poor use of verbal ability in both written and oral form; difficulty learning structured rules such as those necessary in grammar, math and spelling; difficulty sequencing; and poor sense of time due to numerically symbolic relationship and abstraction difficulties. In tighter terms, those labled learning disabled often participate in a manner similar to right-mode functioning through behaviors that show difficulty responding to language stimuli and to analytic thinking, to evaluating details and sequencing, to dealing with abstractions, and through behaviors that are not considered to be temporal rational, digital, logical and linear.

The implication must not be made that all learning disabled persons operate predominately in their right hemisphere. Yet the similarity of mode-preferred functioning and learning disability characteristics offers possibilities for instructional pursuit along right-mode channels. In light of this comparison, drawing instruction addressed to learning disabled adolescents presented through the right-mode channel of awareness should produce positive results in artistic conceptualization and application. Before discussing the project derived from the above stated philosophy, a discussion of right-left hemispheric shift during reading and its influence on student drawing ability is in order.

Right-Left Hemispheric Shift

As previously stated, the average adult can be considered severely learning disabled in relation to his or her ability to draw. There seems to be nothing unusual or significant in that fact until the developmental shift of reading acquisition from right to left hemisphere is analyzed. The time line along which this shift occurs follows student progressive interest in realistic drawing and the resulting failure to do so, causing lack of interest in artistic pursuit.

Briefly, as young children begin to acquire reading skills, learning is dominated by the right-mode as instruction relies on visual-spatial relationships to identify letters and words considered by the child to be unconventional and visually complex. As these letters and words become familiar and are no longer visually complex, right-hemispheric interpretation is required less often. Instead, a shift has occured toward left-hemispheric linguistic complexity where the visual-spatial questions of letter/word formation have been solved but the questions of language analysis and sequencing abilities now emerge. As reading skills develop, attention gradually shifts from whole word format and shape to partial word structural sequence, sound and meaning. Initally, the child relies on global shapes and then shifts to analytic structural abilities as reading abilities mature. This shift occurs at approximately eight or nine years of age (Smith, 1983).

As with reading, artistic development undergoes change due to the right-left hemispheric shift in reading, Initially, the child marvels as some drawing utensil causes a line of sorts to emerge from the end of a stick at his or her own control. At once, scribbling offers a mode of nonverbal self-expression. The

child freely creates as motor skills develop. Progress continues from random scribble to more complex imagery as the child's impressions of self and environment expand, from isolated figures to pictures that tell a story, to increased symbol useage indicating landscape complete with multiple baselines. (Lowenfeld & Brittain, 1970; Edwards, 1979).

As the child's perceptual ability increases, so does the desire to include this new knowledge on paper thus developing a greater concern for realistic interpretation. A child actively involved in drawing thoughout his or her childhood career has an increased chance at discovering beginning letter/word shapes due to a high level of visual-perceptual involvement. During the stages of Dawning Realism in drawing, ages nine to twelve (Lowenfeld & Brittain, 1970), the right-left hemispheric shift in reading should be normally occuring. At this time, expansion is noted in vocabulary growth as words hold synbolic meaning. As details overwhelm the artistic endeavor, symbols evolve and spontaneity and freshness regress. As the brain shifts from right- to left-mode functioning, detail effects both reading and drawing dramatically. Drawing becomes increasingly frustrating as objects do not seem to be rendered correctly. One begins to "know how things are", causing one to look less closely when identifying the world as the eye sees it. By ages ten to eleven, the right-left mode shift in reading has been firmly transacted and words become the conscious be-all, end-all of communication. Verbal influence is not without effect in the drawing realm; causing what is known in words to be transacted incorrectly through drawing. For example, when drawing a cube in realistic fashion, the ten year old child will attempt to show two or three planes of that cube. To accomplish this in a realistic manner, the child must rer.der these planes as oddly

angled planes - shapes which are not square. The verbal, left-mode announces that the shapes are in fact square, and yet when rendered as such, the drawing is incorrect. Only if the child can put aside knowledge of the verbal, left-mode can the cube be analyzed and thus identified correctly and rendered as such (Edwards, 1979).

Left-mode domination casues interference with the right-mode task of drawing through refusal to relinquish control. Left-mode collects only enough information about an object to classify and name it before moving on to another object. In essence, left-mode summons only symbols for objects, a schematic of that object, and refuses to consider anything other than a fleeting observation of any actual object. The drawing process, which requires time for comtemplation; a suspension of time awareness; attention to actual spatial relationships and not to "known" relationships; complete inattention to spoken words; immense involvement, concentration, and attention; thinking involving images rather than words; and occurs most successfully when approached through right-mode channels (Edwards, 1979).

When an understanding of the above-stated shifting effect is grasped, drawing instruction can be better facilitated to any group of artistically learning disabled students regardless of their age level. As previously stated, a learning disability can be considered "failure or inability to learn important connections". Since artistic discovery generally stops unless otherwise programmed for around the age of ten to twelve years, failure to make realistic drawing connections exists as does artistic learning disabilities. Drawing instruction offered to persons above that age level can follow the right-mode programming techniques presented below.

Pairing the LD Student and Right-Mode Drawing Instruction

The subject of drawing has not historically been presented through emphasis on right-mode spatial orientation. Nor has the learning disabled student been given much exposure to art in general, and drawing in particular. Art instruction has most often been offered in the form of crafts or projects involving art materials.

Teaching drawing to learning disabled students in a mode noted to be similar to their idiosyncracies should prove to be a successful endeavor. Given this premise, drawing instruction was given to twenty-five students, ages twelve to twenty-one, who reside at a private, residential school for the learning disabled in Southern Illinois. Seven of these students were female and eighteen male. Instruction lasted fifty-five minutes each class time with eight students meeting three times a week and the remaining seventeen students meeting twice a week. Formal instruction began September 24, 1984, and continued through December 15, 1984. Instruction followed the guidelines provided by Betty Edwards in her book Drawing On The Right Side Of The Brain, with modifications made as necessitated by student interest and strength/weakness considerations. Progress has covered beginning segments through and including modified contour drawing.

The goals of this method of instruction included producing artwork successfully thereby creating a positive self-image,

becoming more aware of concrete spatial relationships in both two- and three-dimensional formats, and increasing visual-perceptual awareness in general. Specific objectives included increasing space, line, and form awareness by manipulating drawings from left to right and copying drawings in unique fashions; increasing the awareness of right-mode thinking and the ability to control that shift by conscious volition; increasing confidence in one's ability to recognize and draw spatial relationships as actually seen through the use of guided experiments in spatial awareness and recognition; increasing confidence in one's problem-solving ability through successful completions of presented exercises; producing the understanding that through practice, techniques become easier to master; realizing that each pen stroke need not produce a masterpiece; allowing oneself to make mistakes and to learn from those mistakes, and realizing that drawing occurs when the ability to perceive is increased.

The procedure, in brief detail, began with a "Draw-A-Man" task with no specific instructions other than that specified. The results yielded immature renderings following the Preschematic Stage to the Gang Age Stage (Lowenfeld & Brittain, 1970). No special talent for drawing was noted, yet this exercise draws mainly on the symbolic schema existing in the left hemisphere.

The second exercise dealt with the figure/ground illusion of a vase/face drawing. Instructions were to draw the profile of a person on the dominant side of the paper (i.e., left side for right-handers, right side for left-handers), to name the facial features, and to attempt to draw a mirror image on the opposite page side. Often confusion was noted as students dealt with the naming procedure followed by drawing attempts. Instruction was

then given to identify line characteristics and different modes of thinking about the first image (i.e., scanning back and forth in the spaces between profiles, estimating angles and curves, noticing spatial relationships instead of naming and categorizing). Success was immediately obvious in all cases.

Further exploration of spatial relationships and conscious right-mode shifting was explored through copying four different line drawings of similar complexity positioned and copied upside down. Pre-drawing instruction encouraged various spatial analysis techniques and discouraged naming and categorizing recognizable parts. Such inverted orientation coupled with appropriate discussion allows spatial relationships to be observed due to the lack of recognizable verbal labels. Through such intense involvement with spatial qualities, awareness of time is lost, verbal conversation remains unheard, and a feeling of relaxed confidence and alertness occurs. The first of the four drawings was not inverted resulting in moderate success for twelve students, unsuccessful attempts by ten students and successful results for three students. The second and third drawings were inverted, with increased results on all counts. The fourth drawing orientation was optional with twenty students preferring inverted orientation and five students preferring normal orientation. Discussion and personal critique occured after each drawing completion. By this time, student awareness of right-mode shifting, the ability to do so, and the results of doing so became a common occurance. The difference in drawing ability and successful production when encouraged to follow right-mode shifting procedure was remarkable. Each of the twenty-five students improved dramatically, with seven students demonstrating what might be considered a "talent" for drawing, not previously noted.

Emphasis for the next exercise was placed on forcing a stronger cognitive shift and suppressing left-mode completely through the use of "pure" or "blind" contour drawings, a form of drawing that allows the eyes to touch only the object being drawn and not the drawing surface. Emphasis is placed on the path of the eye as it undertakes a journey of edge exploration around and through the object being drawn. The drawing utensil is not allowed to leave the drawing surface. Repeated attempts to emphasize the importance of recording that journey (or the process of looking and recording) instead of the importance of the actual product were necessary to encourage initial attempts and to soothe egos as unexpected results occured. Several items such as hands, complex flowers, and kitchen utensils were drawn with instructions to include poses that were complex and therefore not well suited for left-mode performance. After several attempts, all students showed marked improvement while some were most successful in rendering spatially accurate drawings. The ability to render drawings in spatially accurate form while not looking at the drawing surface even once denotes the ability to feel the line space and the length necessary to develop proportional understanding; a complex concept at best.

The final exercise involved a modified contour approach to complex objects. Rendering occurs through this method by minimal glances at the drawing surface and maximal attention on the object being drawn. The drawing utensil is now allowed to be picked up and replaced on the drawing surface. Only eight students progressed to this exercise due to the extra day of instruction per week. These eight students rendered most pleasing drawings of hands in complex poses, lotus pods in a glass pitcher, and bunches of bittersweet branches. Of these eight students, none has produced unsuccessfully yet two of

these students fell into the unsuccessful category while copying the first normally inverted line drawing.

Emphasis for these eight students was finally placed on the production of a large abstract design originating from a highly structured, multiple view of a plant system rendered in modified contour style coupled with an appropriate, patterned background. A differing approach here utilizes the synthesis of left-right mode performance by encouraging problem-solving abilities, attention to detail, listening and sequencing abilities, and direction comprehension. These products are close to completion and the results are extraordinary in all cases.

Project Inferences

The instructional approach previously described must in no way be considered empirical evidence of the right-mode drawing ability of learning disabled students. Instead, consideration may be given to the results only with proper understanding of project limitations. Some of these limitations include no population selection and control resulting in class mixture of student artistic ability and discipline problems; no individual charting and monitoring but rather casual observation made by a qualified instructor; no comparison of specific learning disabilities; no comparison of specific drawing instruction from past educational records; small class size offering maximum control by instructor of learning environment, tasks, and delivery; and instructor's increased awareness of instructional approach strategies with each successive delivery.

Reaching a project conclusion in light of the preceding analysis remains tentative at best. However, the instructor wishes to conclude that the project was highly successful and

resulted in the achievement of all goals and objectives for these specific students. Some observations made include increased motivation noticed in the efforts of the vast majority of students, increased self-confidence evidenced through actual production and verbal discussion with the instructor, increased interest in solving the problems as presented even though verbal comment to the contrary was offered, and increased interest in product production evidenced after emphasis was heavily placed on practice.

Research possibilities for the topic of right-mode drawing instruction and learning disabled students' ability linkage remains largely untapped. Topic consideration could include comparing this topic with fixed and control populations of learning disabled students, learning disabled student progress versus non-learning disabled student progress, learning disabled student performance as opposed to performances of students with other handicapping conditions, large class size versus small class size, and comparison of results among students with similar specific learning disabilities and with dissimilar specific learning disabilities. Other areas as well could be considered such as the effect of right-mode drawing on the affective area so strongly evidenced by learning disabled students (Smith, 1983) with particular notice taken to the areas of body awareness. Problem-solving skills improvement, reading enhancement, and more efficient use of memory search and retrieval skills could be facilitated through improved mental imagery abilities.

Maturational lag theorists suggest that learning disability difficulties arise through delays in normal sequences of development (Smith, 1983). With this thought in mind, if a successful right-mode drawing program were offered to learning

disabled adolescents, drawing on the already existing right-mode preference of certain learning disabled students, would it not be possible to reinforce through visual-spatial exploration of concrete shapes, the visual-spatial relationships necessary in beginning reading for non-reading and low-level reading learning disabled students thus reinforcing and perhaps lessening possible maturational lag?

> "To be shaken out of the ruts of ordinary perception, to be shown for a few timeless hours the outer and the inner world, not as they appear to an animal obsessed with words and notions, but as they are apprehended directly and unconditionally, by Mind-At-Large -- this is an experience of inestimable value to everyone." (Huxley, 1954)

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